CLAIMS

1. Turbine unit, especially for a turbocharger comprising: a rotor housing (2) with at least one admission channel (9) for a fluid; a turbine rotor (4) which is supported in a turbine space (23) of the rotor housing (2); a nozzle ring (6) with a plurality of vane shafts (8) which are located on said nozzle ring (6) in form of a crown, and which comprises on one side vanes (7), which are susceptible to be turned from a substantially tangential position into a substantially radial position (with respect to said crown), and at least one control element (19) in order to change the position of the vanes (7); an actuation device (11) in order to create control movements which are to be transmitted to the VTG mechanism (5-8) with variable geometry; whereby the transmission of a control movement is effectuated by means of a control ring (5) which is positioned coaxially with said nozzle ring (6) and adjacent thereto, and which is movably connected with said at least one control element (19), as well as a guiding and centering device for control ring (5), which comprises at least one roller bearing (3, 20, 21) having roller bodies (3) which substantially roll on a roller contact surface (20) of the control ring (5); characterized in that said roller bearing (3, 20, 21) is arranged between control ring (5) and a ring (6, 38) which may be releasably connected with rotor housing (2), such as e.g. the nozzle ring (6) or a bearing ring (38), so that control ring (5), roller bearing (3, 20, 21) and the possibly releasably connectable ring (6, 38) may be installed in the rotor housing (2) as modular unit (26).

2. Turbine unit according to claim 1, characterized in that at least one of the following characteristics is provided:

a) the roller bearing (3, 20, 21) is provided in form of a cylinder bearing;

b) the possibly releasably connectable ring is the nozzle ring(6),

c) the unit (26a) further comprises a fastening ring (29) which is arranged opposite to vanes (7) on rotor housing (2) and fastened therewith, and which is also connected with nozzle ring (6).

3. Turbine unit according to claim 1 or 2, characterized in that the roller bearing (3, 20, 21) is housed in an axially open free space (5'') of one of the rings, preferably of the control ring (5) and that this free space (5'') is closed by a further ring, especially through a ring (22) which holds axial extensions (24) of rollers (3) of the roller bearing, whereas rolls (3) may be held by this holding ring (22) in a certain distance from one another.

4. Turbine unit according to anyone of the preceding claims, characterized in that a plurality of control elements (19) are fastened on vane shafts (8) on the side of the nozzle ring (6) which is opposite to the vanes (7), and extend approximately radially and have a free end (18) each.

5. Turbine unit according to anyone of the preceding claims, characterized in that the diameters of the control ring (5) and of the releasably connectable ring (6) which cooperate with the roller bearing (3, 20, 21) are calculated such that they allow a certain radial play p of the roller bodies (3) at essentially all operation temperatures.

6. Turbine unit according to anyone of the preceding claims, characterized in that the modular unit (26, 26a), which is comprised of control ring (5), roller bearing (3, 20, 21) and

releasably connectable ring (6) are held together in non-rotatable fashion through inter-engaging projections and depressions (33), and are preferably solicited into this position by means of a soliciting device.

7. Turbine unit according to anyone of the preceding claims, characterized in that between roller bearing (3, 20, 21) and a fluid leading space (9, 23) is arranged at least one ring shaped sealing (27, 28).

8. Turbine unit according to anyone of the preceding claims, characterized in that the roller contact surface (21) of the releasably connectable ring (6, 38) has a smaller diameter as the roller contact surface (20) of control ring (5).

9. VTG mechanism (5-8) of variable turbine geometry for a turbine unit according to anyone of the preceding claims, comprising a nozzle ring (6) on which are provided control shafts (8), each having on one of their ends a vane (7) of variable orientation, said control shafts having on their other ends control elements (19) capable to produce a modification of the orientation of vanes (7), a control ring (5) capable of controlling the control elements (19) and a guiding and centering arrangement for the control ring (5) which comprises at least one roller bearing (3, 20, 21) including roller bodies (3) which roll on a roller contact surface (20) of control ring (5); characterized in that said roller bearing (3, 20, 21) is arranged between said control ring (5) and a ring (6, 38) which is releasably connectable within the housing (2), so that control ring (5), roller bearing (3, 20, 21) and releasably connectable ring (6, 38) form one modular unit (26).

10. VTG mechanism (5-8) according to claim 9, characterized in that it comprises at least one of the following characteristics:

a) the roller bearing (3, 20, 21) is embodied in form of a cylindrical bearing;

b) the roller bearing (3', 20, 21) is embodied as ball bearing;

c) the roller bearing (3, 20, 21) is housed in an axially free space (5'') of one of the rings, preferably of the control ring (5) whereby said free space (5'') is closed by a further ring, preferably by a ring (22) which has axial extensions (24) of the rollers (3) of roller bearing (3, 20, 21);

d) the releasably connectable ring is the nozzle ring (6a);

e) the diameters of the control ring (5) and of the releasably connectable ring (6, 38) which cooperate with the roller bearing (3, 20, 21) are calculated such that they provide a radial play (p) of the roller bodies (3) at substantially all operating temperatures;

f) the modular unit (26, 26a) comprised of control ring (5), roller bearing (3, 20, 21) and releasably connectable ring (6, 38) is held in non-rotatable condition through inter-engaging projections and depressions (33), and is preferably solicited into this position by a soliciting device (32),

g) between roller bearing (3, 20, 21) and a space (9, 23) which carries fluid, a ring shaped sealing (27, 28) is provided;

h) the roller contact surface (21) of the releasably connectable ring (6, 38) comprises a smaller diameter then the rolling contact surface (20) of control ring (5);

i) the roller bearing is formed in a free space (5'') by a number of cylinders or balls which substantially fill said free space (5'');

j) the roller bearing is formed of at least three cylinders or balls which are guided in free space (5'') by a freely rotatable holding ring (22).